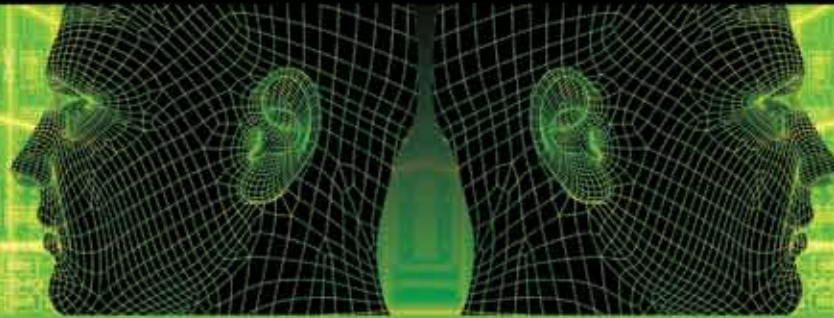




DIGITAL ENTERTAINMENT & EMERGING MEDIA



# MARYLAND'S DIGITAL MEDIA INDUSTRY | SIZE, SCOPE & ECONOMIC IMPACT



MAY 2010 | Maryland Department of Business & Economic  
Development, Maryland Film Office



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Group, Inc.

# **Maryland's Digital Media Industry: Size, Scope and Economic Impact**

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Submitted to:  
Maryland Department of Business and  
Economic Development, Maryland Film Office

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## **Executive Summary**

### Introduction

This report focuses upon Maryland's digital media industry, which forms an important aspect of the New Economy. The industry is closely aligned with technically proficient members of the creative class and includes custom computer programming services (including computer and video game development), software publishing and related segments. The industry employed more than 32,000 people in Maryland in 2008.

### Industry in Statistical Profile

The industry is characterized by growth over time and extremely high wages. For instance:

- According to the Bureau of Labor Statistics, by 2008, the industry's employment tally nationally stood at 1,221,785, which was 19 percent higher than 2003 levels;
- In 2001, digital media industry average annual pay in the U.S. was roughly \$85,000. Seven years later, it exceeded \$92,200;
- Industry employment in Maryland has expanded in every year since 2005;
- By 2008, average annual pay in Maryland's digital media industry exceeded \$100,000, rising 26 percent from its 2003 level while wages increased 16 percent nationally – this is consistent with the notion that Maryland enjoys significant comparative advantage in digital media;
- Digital media is a \$5.5 billion industry in Maryland. Once one considers multiplier effects, the industry is associated with \$15 billion in economic activity in Maryland each year;
- In fiscal year 2008, Maryland's digital media industry contributed more than \$1 billion to State and local government revenue; and
- Maryland is home to one of the nation's leading clusters of computer and video game companies, with many of them located in Baltimore and Montgomery county

### Conclusion and Policy Implications

Like the life sciences, an industry that the State of Maryland continues to support in a variety of ways, digital media possesses all of the characteristics that justify a statewide commitment to accelerating growth. The industry is associated with a disproportionate presence in Maryland, high wages, rapid innovation, social contribution, synergies with other industries including defense, concentrated technical talent and significant future expansion potential.

There are potential synergies between the industry and other key segments deemed key to Maryland's future prosperity, including defense-related research and development, film/television production and custom computer programming. Explicit efforts should be made to bind the industries' defense research and development and computer and video game production industries together, including by creating forums in which business leaders from the two industries can be formally introduced.

## **Maryland's Digital Media Industry: Size, Scope and Economic Impact**

## Introduction

Global competition has unleashed a frantic race to the top as developing nations increasingly leverage their low cost advantages to attract traditional industries, leaving developed nations to focus on innovation and the creation of new economic segments. There are a number of cutting-edge economic segments that increasingly emerged as focal points for policymakers in the U.S. and Maryland, including aerospace/defense technologies, life sciences, alternative energy, software development, nanotechnology and precision instruments.

This report focuses upon Maryland's digital media industry, which forms an important aspect of the New Economy. The industry is closely aligned with technically proficient members of the creative class and includes custom computer programming services (including computer and video game development), software publishing and related segments. Analysts define digital media as representing media that can be delivered electronically and includes activities such as:

- E-commerce
- Electronic games played online, social websites, mobile devices, or video game consoles
- Internet publishing of books, music and videos
- Mobile communication including cell phones and GPS navigation
- Online education
- Video conferencing
- Accessing film, television and videos on the Internet
- Web design and development.<sup>1</sup>

Exhibit 1 provides detail regarding the economic segments included in this analysis. Custom computer programming services comprise the bulk of local industry employment.

Exhibit 1. Definition of Digital Media Industry		put in order from most to least
<i>NAICS Code (6 digit level)</i>	<i>Industry Description</i>	<i>Maryland Employment 2008</i>
541511	Custom Computer Programming Services	23,561
423430 <sup>2</sup>	Computer and Computer Peripheral Equipment and Software Merchant Wholesalers	5,825
511210	Software Publishers	2,013
454111	Electronic Shopping	717
454112	Electronic Auctions	51

Source: Bureau of Labor Statistics, Sage Policy Group, Inc., Industry definitions supplemented by ERA

<sup>1</sup> Economics Research Associates, Project No. 18014, 2009 (49).

<sup>2</sup> This industry comprises establishments primarily engaged in the merchant wholesale distribution of computers, computer peripheral equipment, loaded computer boards, and/or computer software.

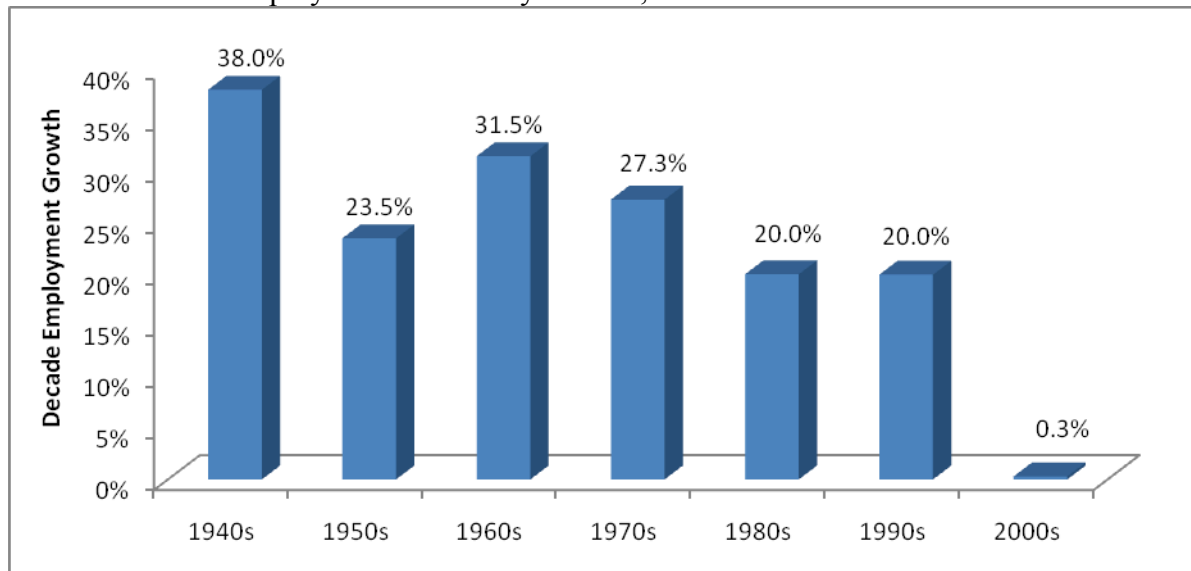
This report provides an assessment of the industry's growth in Maryland over time, its relative concentration in the state and key economic aspects including associated salaries. The report also provides additional detail regarding the state's computer and video game development industry, as well as simulation and modeling for serious game application which is heavily concentrated in Baltimore County, Montgomery County, and Southern Maryland.

### A Statistical Profile of the Digital Media Industry

- Digital Media in the U.S.

The recently ended decade has been deemed by many as representing the worst ten-year period for job growth since the decade of the 1930s. During the 1940s, payroll employment expanded 38 percent in the U.S. During the 1950s, the number of jobs expanded 24 percent. The 1960s produced 31 percent growth in jobs while the 1970s, often associated with oil shocks and recession, produced 27 percent employment expansion. Despite a protracted and severe economic downturn during the early 1980s, the decade managed to produce a 20 percent gain in jobs as did the 1990s. During the recently completed decade, however, there was essentially no job growth in America despite a 10 percent increase in population.

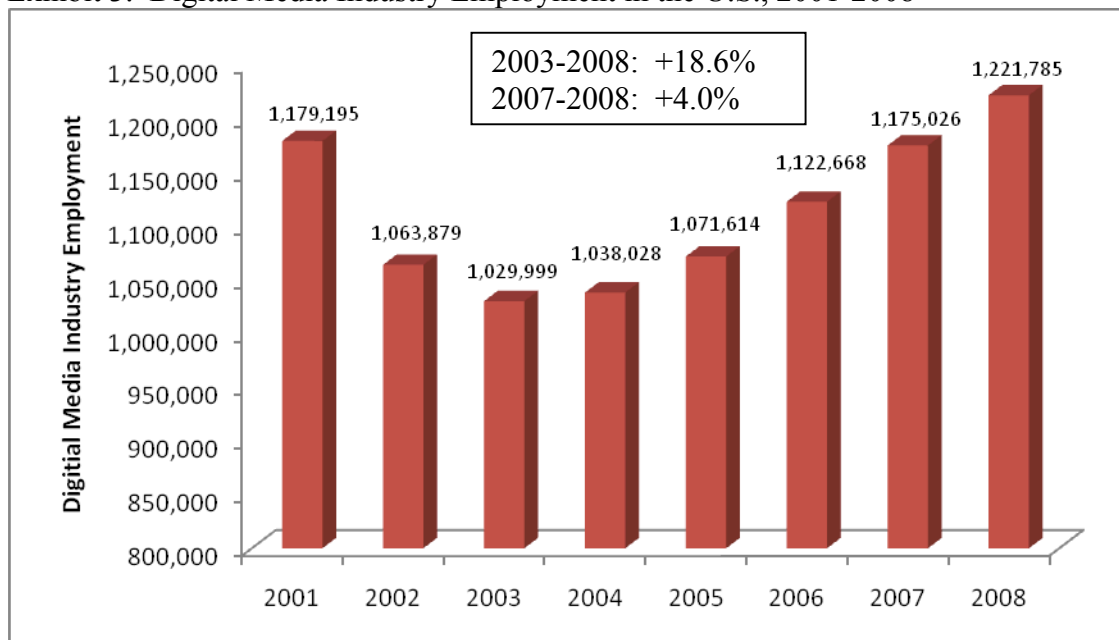
Exhibit 2. Total Employment Growth by Decade, 1940s-2000s



Source: Bureau of Labor Statistics

In this context, the expansion of Digital Media employment has been reasonably solid. As defined, the industry reported 1,921,611 employees in 2001 nationally. By 2003, this total had declined to 1,668,893 due to the recession of 2001 and its aftermath. By 2008, the industry's employment tally stood at 2,059,566, a retracement of 23.4 percent from the cyclical low experienced in 2003.

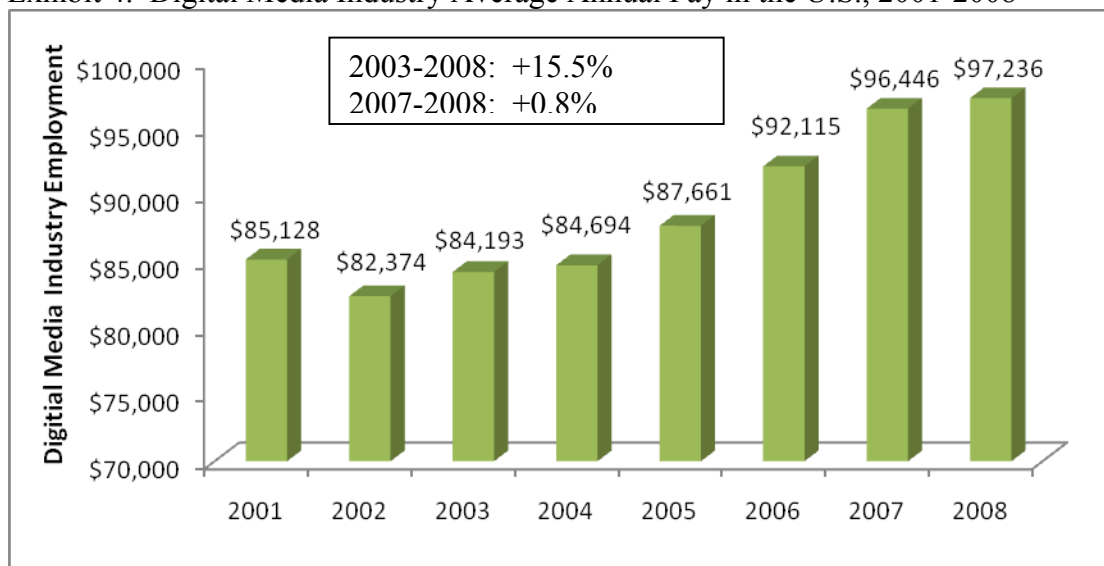
Exhibit 3. Digital Media Industry Employment in the U.S., 2001-2008



Source: Bureau of Labor Statistics

Perhaps more importantly, industry compensation is high and rising. In 2001, digital media industry average annual pay in the U.S. was roughly \$84,000 while the average annual salary for all industries was \$36,000. Seven years later, the digital media industry stood at \$97,000, compared to the average for all industries was \$45,563. Between 2003 and 2008, average pay in the sector expanded 15.5 percent, though the pace of compensation expansion slowed substantially in 2008 likely due to broad economic weakness.

Exhibit 4. Digital Media Industry Average Annual Pay in the U.S., 2001-2008

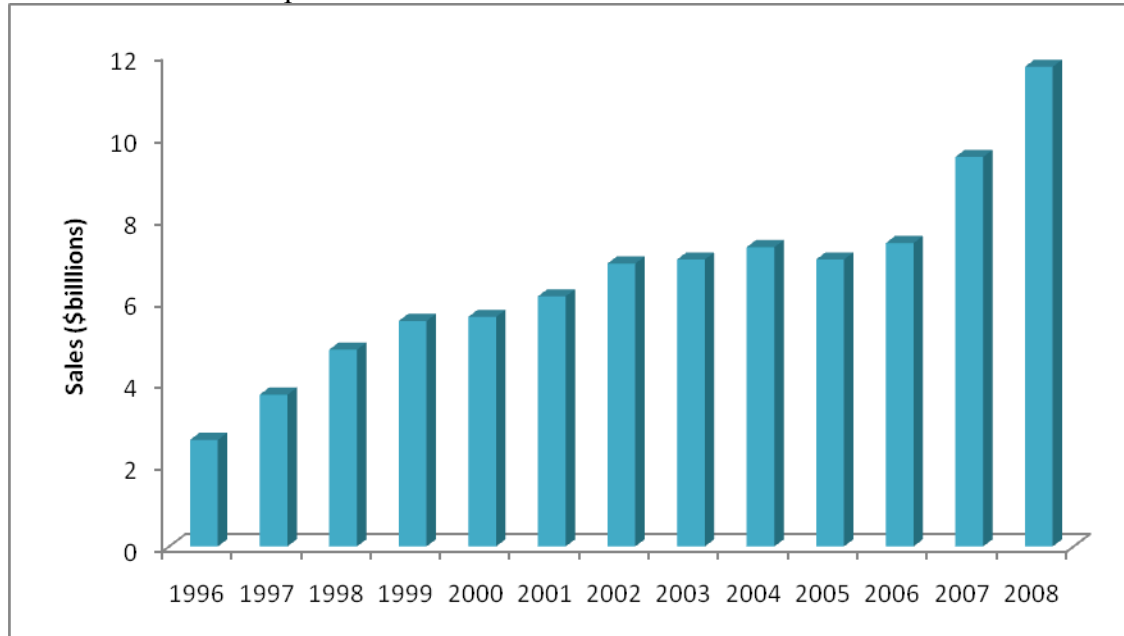


Source: Bureau of Labor Statistics



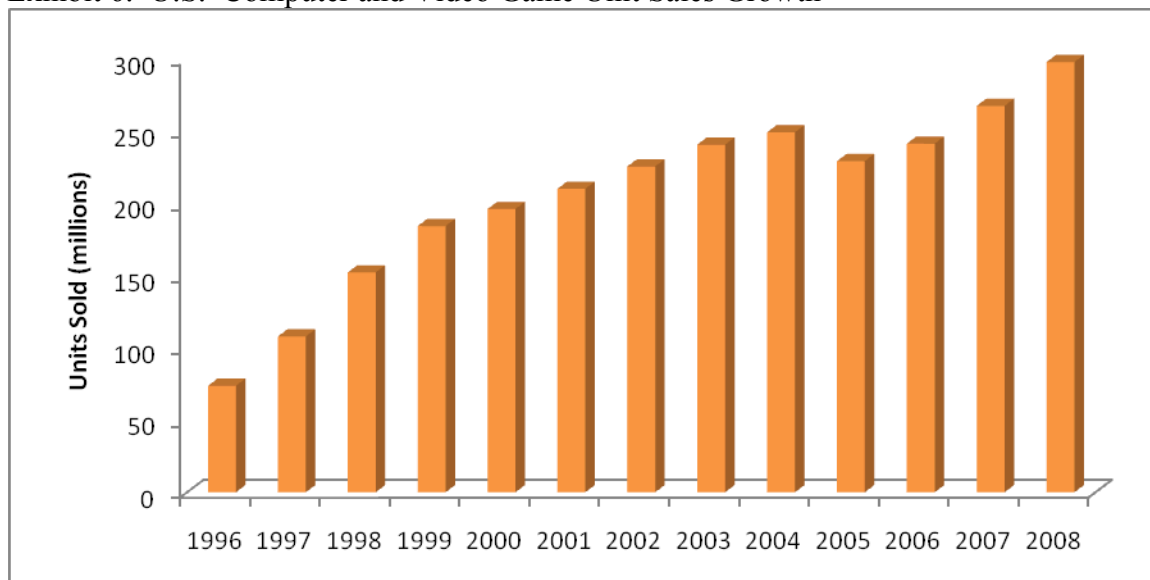
Exhibits 5 and 6 provide data from the NPD Group regarding U.S. computer and video game sales growth since 1996. Exhibit 5 reflects growth in dollar sales while Exhibit 6 provides statistical detail regarding unit sales.

Exhibit 5. U.S. Computer and Video Game Dollar Sales Growth



Source: The NDP Group, Inc. - Retail Tracking Service

Exhibit 6. U.S. Computer and Video Game Unit Sales Growth

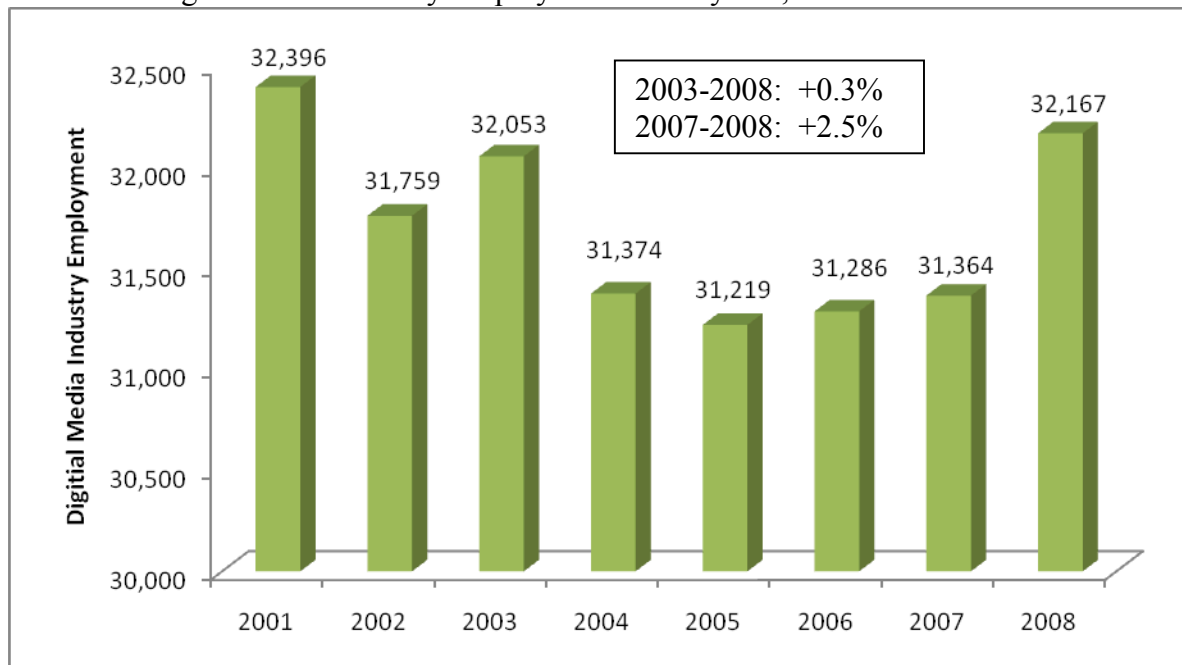


Source: The NDP Group, Inc. - Retail Tracking Service

- Digital Media in Maryland

Trends are similar in Maryland, where digital media represents an expanding high-wage industry. Exhibit 7 provides employment data in Maryland from 2001-2008. Industry employment actually declined in Maryland from 2001-2005, but has more recently returned near its 2001 level and expanded in every year since 2005 (through 2008).

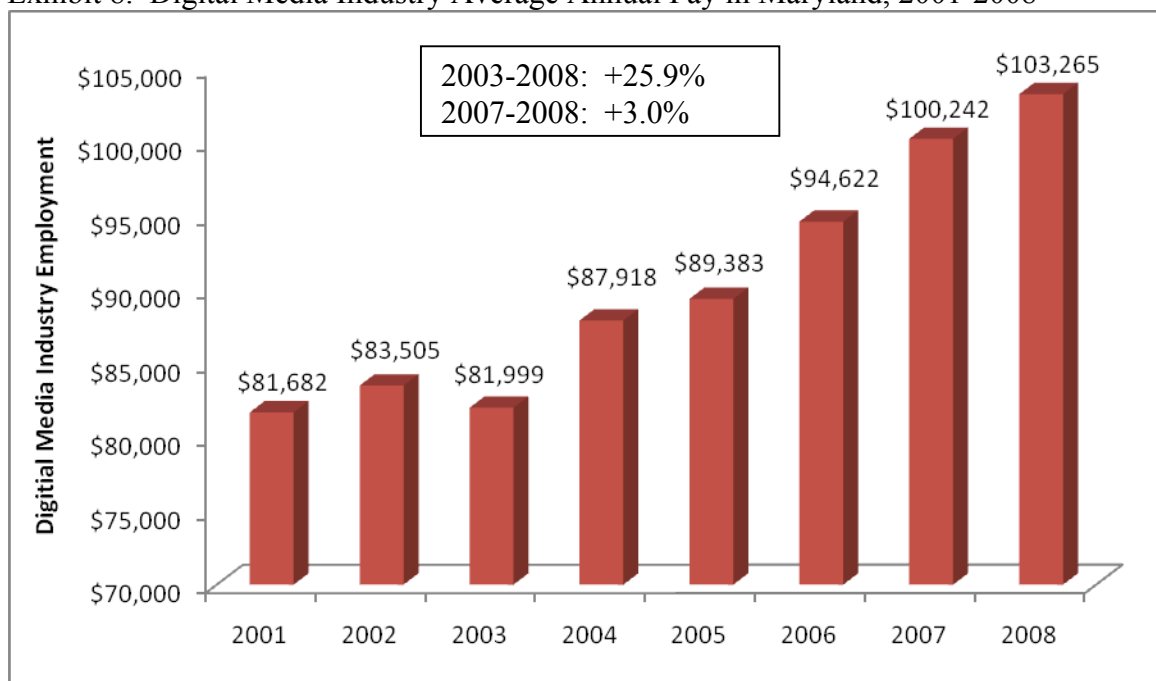
Exhibit 7. Digital Media Industry Employment in Maryland, 2001-2008



Source: Bureau of Labor Statistics

Exhibit 8 shows that by 2008, average annual pay of the industry in Maryland exceeded \$100,000, rising 23 percent from the 2003 level. This is attributable to extremely high average wages in a number of industry sub-segments, including software publishing (\$105,700) and custom computer programming services (\$100,500).

Exhibit 8. Digital Media Industry Average Annual Pay in Maryland, 2001-2008



Source: Bureau of Labor Statistics

- A Look at the Computer and Video Game Industry

The computer and video game industry has become a target of special interest to Marylanders due to an emerging concentration of the industry in the Free State. Much of this activity is centered in Baltimore County, though significant company presence is also apparent in Montgomery County and other portions of Central Maryland and Southern Maryland.

The industry is not only a focus of interest in Maryland because of its size, but also because of its implications for other key Maryland industries. States continue to see the significant contributions the entertainment software industry makes to other sectors of the economy such as health care, education, human resources, and defense. Increasingly, these sectors are using video games and game technology to train physicians, emergency medical personnel and the military, as well as provide workforce training. Robert W. Crandall and J. Gregory Sidak of the Brookings Institute report that, "this market will have a ripple-effect and spread technological innovations to other industries"<sup>3</sup>

Computer and video games were introduced as a commercial entertainment medium in 1971 and became the basis for an important entertainment industry in the U.S. by the late 1970s or early 1980s.<sup>4</sup> Since that time, game applications have become more sophisticated and used for a growing set of purposes. This partially explains optimistic industry forecasts. For instance, PricewaterhouseCoopers projects the industry to expand from \$41.9 billion in global sales in

<sup>3</sup> *The Current and Potential Economic and Fiscal Impacts of Texas' Moving Media Industry*, Center for Economic Development and Research, University of North Texas, Final Report, December 1, 2008.

<sup>4</sup> Economics Research Associations, op. cit.

2007 to an estimated \$68.3 billion by 2012. Another source of expansion for the industry has been the emergence of new distribution channels for industry content, including mobile phones. The industry's historic performance is consistent with these expectations. In 1996, the U.S. entertainment software industry accounted for 74.1 million units sold and \$2.6 billion in sales revenue. By 2007,<sup>5</sup> computer and video game companies sold 267.8 million units generating \$9.5 billion in revenue.

Industry employment continues to expand. Much of the job growth is among smaller developer firms. The national average salary for employees was \$92,300 in 2007, which was associated with total national compensation of \$2.2 billion that year. Exhibit 9 provides statistical detail regarding salaries in the computer and video game industry by occupation and according to years of experience.

Exhibit 9. Salaries per years of experience and position in the computer and video game industry (2007)

<i>Occupation</i>	<i>Years of Experience</i>		
	0-3	3-6	6+
Art Director	N/A	\$81,071	\$102,806
Artist & Animator	\$43,657	\$59,452	\$74,335
Associate Producer	\$46,667	\$55,833	\$65,147
Creative Director / Lead Designer	N/A	\$60,833	\$93,611
Executive Producer	N/A	\$93,611	\$125,000
Game Designer	\$46,208	\$54,716	\$74,688
Lead Artist	\$40,417	\$68,041	\$84,236
Lead Programmer	\$80,833	\$111,250	\$128,676
Producer / Project Lead	\$62,500	\$67,500	\$89,184
Programmer / Engineer	\$57,665	\$75,070	\$94,525
Technical Director	\$75,761	\$77,418	\$103,409
Writer	\$51,731	\$59,167	\$52,500

Source: Game Career Guide

Maryland is capitalizing on some of the technological innovations spurred by the computer and video game industry for medical purposes. Engineers at Johns Hopkins University Applied Physics Laboratory recently adapted Nintendo's Wii console to help patients with amputated limbs regain movement and motor skills by using video games as part of their physical therapy routine.

Computer and video game applications also offer significant educational benefits for children. According to a report from The Joan Ganz Cooney Center at Sesame Workshop, "digital games show significant potential to promote children's growth and healthy development. They can foster skills and knowledge that help children with academic learning, as well as habits that contribute to better health."

<sup>5</sup> Economics Research Associates, op. cit.

<sup>6</sup> *Game Changer: Investing in digital play to advance children's learning and health*, June 2009.

One of the most intriguing aspects of the computer and video game industry is its expanding connection to military applications. A recent *Economist* article highlighted an order placed by the U.S. Air Force for 2,200 Sony PlayStation 3 video-game consoles, which will serve as the building blocks for a supercomputer.<sup>7</sup> Xbox video-game controllers have been modified to control renaissance robots and drone aircraft. Graphics chips that power personal computer video cards are now being utilized by defense firms to run simulations.<sup>8</sup>

From the perspective of economic development in Maryland, this creates substantial new opportunities to link two emerging industries. The latest round of base realignment has further concentrated research and testing activities and defense communications in Maryland. Potential synergies between computer and video game companies, defense contractors and military bases should be explored since much of the economic activity and opportunity created by such interactions would remain in Maryland. These synergies may also help to bolster America's defense and homeland security efforts.

### Measuring the Economic and Fiscal Impacts of Maryland's Digital Media Industry

- Economic impacts

Using IMPLAN 3.0 modeling software, which embodies Maryland-specific economic multipliers based on the statistical relationship between industries, Sage was able to estimate the total economic impact of the digital media industry in the Free State. According to IMPLAN, digital media represents \$15 billion in economic activity in 2008 once multiplier impacts are considered. The industry itself is approximately \$5.5 billion in size and employs 32,167 people directly and 101,406 people once sizable multiplier impacts are considered. The multiplier is higher in this industry than is typical largely because of the segment's lofty average wages. Exhibit 10 provides summary detail.

Exhibit 10. Economic Impact of Digital Media Industry in Maryland in 2008

<i>Type of Impact</i>	<i>Employment</i>	<i>Labor Income (\$millions)</i>	<i>Business Sales (\$millions)</i>
Direct	32,167	\$8,641.5	\$5,504.5
Indirect	14,249	\$715.9	\$2,106.3
Induced	54,638	\$2,344.4	\$7,153.8
Total	101,054	\$11,701.8	\$14,764.6

<sup>7</sup> *The Economist*, The military-consumer complex, December 12<sup>th</sup>, 2009.

<sup>8</sup> *id.*

- Fiscal impacts

In fiscal year 2008, the digital media industry contributed more than \$1 billion to State and local government coffers in Maryland. Of this total, more than half went to the State of Maryland while the balance went to local governments in the form of local income and property taxes.

Exhibit 11. Fiscal Impact of Digital Media Industry in Maryland in 2008

<i>Type of Fiscal Impact</i>	<i>Revenue (\$ millions)</i>
Local Income Tax Revenue	\$210.3
Local Property Tax Revenue	\$258.5
State Income Tax Revenue	\$219.1
State Property Tax Revenue	\$28.7
State Sales Tax Revenue	\$280.6
Corporate Profits Tax Revenue	\$23.5
<b>Total State/Local Tax Revenue</b>	<b>\$1,020.7</b>

#### Conclusion and Policy Implications

Like the life sciences, an industry that the State of Maryland continues to support in a variety of ways, digital media possesses all of the characteristics that justify a statewide commitment to accelerating growth. Colleges from Anne Arundel Community College to UMBC have programs for students to specialize in the digital media industries and allow academia to research the capabilities of the industry. The industry is associated with a disproportionate presence in Maryland, evidence of significant comparative advantage, high wages, rapid innovation, social contribution, synergies with other industries including defense, concentrated technical talent and significant future expansion potential. The digital media industry also presents potential synergies with other industries key to Maryland's future prosperity, including defense-related research and development. Explicit efforts should be made to bind the two industries together, including by creating forums in which business leaders from the two industries can be formally introduced.